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PROJECT 10

Actuarial Report

on

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I. PURPOSE AND SUMMARY

The purpose of this report is to set out the results of an actuarial study and valuation of the proposed agency retirement system. The actuarial valuation brought out certain indices which may be useful in comparing the relative cost of the proposed agency retirement system with that of the Federal Civil Service Retirement System. A summary of these indices is as follows:

System (1)	Relative % of Payroll Cost 1/ (2)	Index 2/ (3)
A. Civil Service Retirement System for all covered employees (average attained age 43)	19.5% 3/	100%
B. Civil Service Retirement System for Project 10 Agency employees (average attained age 35)	16.4%	84%
C. Proposed Agency Retirement System for Identified Group and Civil Service for the balance	18.6%	95%
D. Proposed Agency Retirement System for all Agency Employees	22.6%	116%

1/ Normal Cost (employee and employer portion) plus interest @ 3% on the deficiency for the non-retired employees. The methodology is explained in more detail later on in the report.

2/ Related to Civil Service Retirement System at 100%.

3/ This is 18.9% after taking into account the assets on hand, per the Thirty-Seventh Annual Report of the Board of Actuaries of the Civil Service Retirement System for the Fiscal Year ended June 30, 1957.

The above indicated cost indices are based on the factors used in valuing the Civil Service Retirement System. To test the appropriateness of these indices

for the Project 10 Agency group, the separation experience of the last three years (1956, 1957 and 1958) was analyzed along with the average salaries by age groups in 1958, and on the basis of this analysis certain valuation factors were developed to value the main benefits of the proposed agency retirement system. Following essentially the same methodology used in applying the Civil Service Retirement System factors, but with valuation factors derived from certain experience made available, we find that the proposed agency retirement system cost would come to 29.5% of the covered payroll. This compares with the 22.6% factor noted above, and the difference in cost indices is largely attributable to the higher salary scale used for the Project 10 Agency as compared with that used in valuing the Civil Service Retirement System.

Another aspect of this study is to comment on the proposed agency retirement system, and these comments are set out in the next section hereof.

II. COMMENTS ON PROPOSED AGENCY RETIREMENT SYSTEM

A memorandum dated 14 July 1958 and labeled "Tentative Detailed Description of Proposed Agency Retirement System" was made available for our consideration in connection with the determination of the cost indices. Also, the proposed 1958 amendments (not adopted) to the Foreign Service Act of 1946, as amended, as well as a 1 March 1957 and a 28 February 1957 Memorandum on proposed legislation for retirement benefits were made available. It was noted that the proposed agency retirement system is similar in many respects to the proposed 1958 amendments of the Foreign Service Act.

There appear to be two main objectives considered in connection with specifications of the proposed Agency Retirement System. The primary objective of proposing legislation was stated in the 28 February 1957 memorandum as being "to improve the service by providing retirement at an age earlier than that provided by

the Civil Service System together with an 'augmented' annuity to those persons who have served extensively overseas" with the Agency. A secondary objective was stated in the 1 March 1957 memorandum, in a negative way, to the effect that the Bureau of the Budget is opposed to any formula which would give the Agency "a situation substantially more generous than that of the Foreign Service, and permit earlier retirement with as little as one year overseas out of each four years of total service"

To accomplish the first of these objectives, and in some measure the second objective, the following represent the salient features of the proposed Agency Retirement System as outlined in the 14 July 1958 memorandum. Our comments follow each of these features.

A. Coverage restricted to career employees and to certain contract employees.

Comment: An appropriate method for restricting the coverage to career employees and certain contract employees has been established. This method takes into account age, length of total service, length of total foreign service as well as that portion of foreign service while with the Agency. Consequently, the formula, representing the appropriate combination of age and service requirements, assures automatic fulfillment for coverage.

B. An employee who has attained age 50 after 20 or more years of service of which at least 10 have been overseas with at least five of them with the Agency, may retire, with the permission of the Director, on a pension of 2% of the highest five-year average compensation per year of service.

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Comment: This is known as the ▮▮▮▮▮▮▮ Formula," and the coverage requirements have already been noted above.

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C. A retired employee under the proposed Agency retirement system could accept employment elsewhere in the government with suspension of only such portion of his pension, which together with the balance of his pension and his salary would exceed his salary with the Agency at his time of retirement.

> Comment: This would appear to give such a retired employee an incentive to find a job elsewhere in the government. However, we understand that the Civil Service Retirement System already provides for this kind of benefit and there are several hundred people who have taken advantage of it.

D. Involuntary retirement after age 45 and 5 or more years of service with limited annuity (i.e., limited to 25% of pay) or after age 55 and 25 or more years of service (pension determined by 2% formula if the 5 - 10 requirement for overseas service is met, otherwise by the regular Civil Service formula).

> Comment: An employee not meeting the 5 - 10 requirements for the 2% formula can be retired by the Director earlier than under the Civil Service System, which provides for involuntary retirement after age 50 and 20 years of service for a reduced benefit. An employee who has attained age 45 and has 20 years of service, for example, would get the 25% limiting pension by the proposed Agency formula. Also, there could be a sharp "break" between benefits available to an employee who had attained age 55 with 25 years of service, as compared with the employee age 55 with 24 years of service, or an employee age 54 with 25 years of service at the time of involuntary retirement.

In both of these latter two cases the 25% limit would seem to apply, whereas it would not apply in the age 55 and 25-year combination.

E. Involuntary retirement after 5 years of service but when under age 45 for a lump-sum settlement equal to one year's pay, or employee contributions with interest if greater.

Comment: In a few instances the value of the deferred vested benefit now available under the Civil Service System might be greater than one year's pay. However, the proposed benefit would probably be much more costly generally.

F. Compulsory retirement at age 60 (year-to-year extension to age 70 by Director possible).

Comment: This compares with age 65 and year-to-year extension for 5 years for career ambassadors or ministers, or age 60 with year-to-year extension for 5 years for other foreign service officers under the proposed Foreign Service Act.

Appendix A at the end of the report has been prepared to give a detailed side-by-side comparison of the Federal Civil Service System, the Foreign Service System, and the proposed Agency System.

III. EMPLOYEE DATA

The employee data were made available in the form of four distributions by sex, age and service and for each "cell" (i.e., quinquennial age and service grouping) the average annual compensation was shown. The break-down in data was determined first on the basis of those who might become qualified for the 2% formula benefits at age 50, within each of these two major groups the data were split by sex, and then for each of the four resulting groups the data were distributed by quinquennial age groups and service.

To obtain the data, we understand that questionnaires were sent to the field, and individual personnel records were referred to in order to obtain lengths of service; in the Agency overseas, out of the Agency but within the government overseas, in the Agency in U. S. and out of the Agency but within the government in U. S. When almost 80% of the questionnaires were received from the offices that have the predominant amount of overseas service and about 90% of the balance of questionnaires were received, the data were analyzed from the standpoint of which employees might be expected to qualify for the 2% formula benefits at age 50. We estimated at this point that 100% returns could not affect the cost results by more than 2% of the cost indices, as compared with cost results based on these data. This analysis was generally done by the departmental heads involved from rosters which were prepared in age order, on an individual basis for those attained 40 or over, and on a percentage basis for quinquennial age groups of those under age 40. Then by the use of I.B.M. procedures we understand that those most likely to qualify for each of the respective age groups under 40, by reason of length of overseas service, were selected to be included with the identified group. Finally, the age and service distributions were prepared on the basis of an assumed ▌▌▌▌ total work force. These distributions are included in Appendix B at the end of this report. Table 1 has been prepared from these distributions to show the characteristics of the data by age groupings. It is of some interest to note that the average age of the group is 35, as compared with an average age of 43 for the Civil Service group (this latter being based on 9-30-53 data). Since the average age of the Agency group being analyzed is eight years younger than that for the Civil Service covered group as a whole (actually there may be more of a differential on the basis of more up-to-date data), and since the age at employment is also generally younger for the Agency group, it is expected that the level of costs for comparable benefits would be much lower for the agency group than for the total Civil Service groups. This was brought out in items A and B set out in Section I of this report.

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A. Withdrawal Rates

Next, employee data were made available with respect to terminations that took place in the years 1956, 1957 and 1958 (see Appendix B for the information made available). These terminations were adjusted in each of the years involved to conform to a work force of ████ employees, in order to be on a comparable basis with the data made available for the active group of employees. Then the terminations were analyzed in order to determine approximate withdrawal rates to use for valuation purposes. The withdrawal rates so derived were computed to reflect the probable financial experience of a pension plan, this being done in such a way that a person terminating after five years of service, for example, would be weighted five times that of a person terminating after only one year of service. The resulting rates of turnover used for the "experience" valuation are as follows:

Table 2

Annual Withdrawal Rate per 1,000 Employees
(includes mortality)

Age (1)	Males (2)	Females (3)
22	65	210
27	44	130
32	31	88
37	21	62
42	13	42
47	8	26
52	7	16

It is difficult to make an exact comparison of these rates with those used for the valuation of the Civil Service Retirement System as a whole because of a technical difference in their construction. The technical difference in construction lies in our using the simpler aggregate approach in constructing the

rates, as compared with the select and ultimate (ultimate after 3 or more years) approach used in the Civil Service rates. However, at the higher ages when the effect of turnover is relatively minor and pension costs become more important, there appears to be no very significant difference in the respective sets of rates. On the other hand, although the turnover experience was not analyzed for each of the first three years of employment, which would need to be done in order to make a direct comparison with the Civil Service rates, there are indications that the Agency turnover for the younger ages is significantly lower than that used for the valuation of the Civil Service Retirement System.

B. Salary Scale

Since the benefits are to be based on the final five-year average earnings, some analysis was made of the average earnings by age groups in order to obtain a salary scale which could be used for the purpose of estimating the appropriate final average earnings on which benefits will be based. Here we found the greatest departure from the comparable Civil Service factors, which may be illustrated as follows:

Table 3

Pro-Forma Ratio of Five Year Average

Earnings of Age 60 - 64 Group to Current Earnings

Current Age Group	Males		Females	
	Current Agency Data	Civil Service Salary Scale [1]	Current Agency Data	Civil Service Salary Scale [1]
Under 30	2.50	1.29	1.20	1.13
30 - 34	1.50	1.18	1.15	1.08
35 - 39	1.40	1.11	1.10	1.05
40 - 44	1.30	1.07	1.05	1.03
45 - 49	1.20	1.04	1.02	1.02
50 - 54	1.10	1.02	1.01	1.01
55 - 59	1.05	1.01	1.00	1.005

[1] This relatively "flat" salary scale was used in the 1953 valuation and seemed to conform to the differentials in salary by age groups at that time.

Since the current Agency data are related much more closely to the differentials in average earnings by age group, which are higher than the Civil Service Salary Scale, it may be expected that the level of costs as we have determined it would be higher than when determined by the Civil Service factors. For example, in the case of a male employee hired under age 30 at a $4,000 annual salary, we would assume that he would be earning $12,000 when he reached the age 60 - 64 group for the Agency (i.e., $4,000 times 2.50), as compared with $5,160 for the average Civil Service employee (i.e., $4,000 times 1.29). Since the level of estimated earnings in the age 60 - 64 bracket for the agency employee is more than double what it would be for the average Civil Service employee, prospective pension benefits would be correspondingly higher. This, in our opinion, is the most significant difference in the respective actuarial factors used for valuation purposes and is the main reason why we get a percentage of payroll cost of 29.5%, as compared with 22.6% for the proposed Agency Retirement System.

We understand that the Civil Service compensation levels have increased by some 15% since 1953, and the question has been raised concerning what effect this might have on the Civil Service Salary Scale factors and the resulting costs when expressed as a percentage of payroll.

With respect to the salary scale factors, you will note from Table 3 that these represent ratios of the average earnings for those in the age 60 - 64 group to the average earnings of the other age groups. To put it another way, the salary scale factors represent the relationship of average earnings of different age groups at a particular time, and this relationship would not be changed by a 15% across-the-board increase in earnings. For example, consider again the $4,000 Civil Service employee who would progress to $5,160 by the Civil Service Salary Scale. If the $4,000 is increased by 15% to $4,600, then the $5,160 would be correspondingly changed to $5,934 by the 15% change. Consequently, increases in pay levels

in the same way would have no effect on the salary scale factors.

Relative to costs, if we can assume that the increases in pay levels have been of the across-the-board type noted, which would affect all age levels in the same way, then there would be no change in the normal cost when expressed as a percentage of payroll. The increased number of normal cost dollars required to provide the increased dollars of benefits would be exactly met by the additional dollars in contributions involved by applying the same normal cost percentage to a higher payroll. On the other hand, an across-the-board increase in pay, which is not a part of the salary scale, would lead to higher past service costs to the extent that past service benefits would then be based on a potentially higher earnings level than provided for by the salary scale. Of course, the annual past service cost as expressed herein is much less than the normal cost, and so this may not be a matter of too much significance. However, there is an offsetting factor involved here, and it is this. We understand that the across-the-board increases, whereas generally applicable in most instances, have not been applicable in a number of instances to the higher paid (and older) employees. If this means that the ratios of the final average earnings before retirement to current earnings, as a result of these pay increases, may be lower than those which held prior to the pay increases, then the normal cost would be lower when expressed as a percentage of payroll. In balance then, it does not appear to us that a 15% increase in the Civil Service earnings levels would involve much difference in the percentage of payroll cost indices as set out herein, and these cost indices are therefore comparable with those worked out for the Agency on the basis of the 1958 information made available.

IV. ACTUARIAL METHODS

As already indicated, we have adopted as a cost criterion the normal cost plus interest at 3% on the deficiency. The assets recognized as being on hand to fund the Civil Service Retirement System appear to be sufficient to take care of the retired group of employees and to provide for the return of employee contributions before retirement for employees terminating. As already indicated, the June 30, 1957 valuation results for the Civil Service Retirement System indicated an 18.9% of payroll cost as compared with our figure of 19.5% which does not take into account any assets. Consequently, we felt that this relatively small reduction in costs attributable to assets could be ignored for the purpose of the cost indices derived and set out herein.

The normal cost represents the level annual percentage of earnings that would be required to fund, on the average, the given level of benefits for a person who enters the system and progresses through to retirement. Of course, the normal cost also includes some provision for those people who do not live through to retirement but terminate or die along the way with reduced benefits becoming available.

The deficiency then represents an accumulation of normal cost amounts from the past that would now, from an actuarial standpoint, be in a fund if the plan had been funded on this basis, so that such fund together with interest thereon at the assumed rate plus the future normal cost payments will be sufficient to pay benefits as they fall due. In other words, the deficiency is tantamount to the accrued liability as of the date of valuation.

Because of the deferred nature of most pension benefits and because of the power of the government to levy taxes, the government view point seems to be that the full deficiency of a pension plan, administered under its aegis, need not be matched by assets, particularly when these assets held by the government would

be in the form of government bonds. In fact this thought was expressed recently by the President when he vetoed the bill (House Document No. 429, 85th Congress) which included a deficiency appropriation for the Civil Service System. The following statement is taken from his message to Congress:

> ". . . The Retirement Act promises to make certain payments under specified conditions and, regardless of the size of the balance in the retirement fund at any particular time, these benefits will be paid because the promise to do so is backed by the Government. To assume otherwise is to call into question the full faith and credit of the United States Government."

The factors and summary work sheets made available by Mr. Brown and Mr. Rasor of the Civil Service Commission were used in connection with certain studies made by them in the course of the past several years. We understand that the basic data used for these studies was taken from certain sample studies. Also, it is understood that new data are being prepared on the basis of a census of government agencies, taken in 1958, and certain revisions will be made in the valuation factors which will then be used in making a more up-to-date valuation of the Civil Service System. The results of the valuation based on the work sheets and factors made available for our perusal have not been published. However, we reviewed the derivation of factors and work sheets, and then we tested the application of the various factors involved from the standpoint of reasonableness and technical accuracy. Next, we compared the percentage of payroll cost results with certain summaries that had been made in connection with the valuations. In order to avoid some of the intricacies introduced by the application of the factors to the agency data, we experimented with approximations until we had developed factors which produced results within 2% of the results as summarized on the basis of the application of the much more complex Civil Service factors to the Civil Service data. These approximate factors, which produced results within 2% of the results by the more complex Civil Service factors, were then used for the various computations which we have designated as being on the basis of the Civil Service factors.

A breakdown of the normal cost percentages of payroll cost and an indication of the past service cost is set out in more detail in Table 4. Although each of the component parts of the break-down are of less significance than the total, when compared with the Civil Service results, we have set them down since they may be useful as a guide for estimating the effect of possible changes in the proposed benefits.

V. ACTUARIAL ASSUMPTIONS

Several of the actuarial assumptions used for our valuation of the proposed Agency Retirement System have already been noted in connection with our analysis of the data in Section III hereof. These had to do with the turnover and salary scale assumptions. Other actuarial assumptions are as follows:

A. _Interest_ - 3%, as assumed in the last Civil Service valuation.

B. _Mortality_ - This is, of course, of more significance after retirement than before retirement, since before retirement the rate of mortality is mixed in with the turnover assumptions. We used an up-to-date (but not overly-conservative) mortality table, based on a group annuity experience through 1950, which was then projected to 1965 on the basis of certain published factors to take into account some measure of anticipated future improvement in mortality (T.S.A. IV).

C. _Disability_ - A moderate rate of disability, on the assumption of a fairly strict administration of these benefits, was used. Appropriate disability annuity functions were also adopted. Since the turnover assumption was deemed to exclude disabilities who would be eligible for benefits, only a temporary disability annuity providing for benefits up to the applicable normal retirement age was assumed. This was done on the assumption that the reserve accumulated for the normal pension would be adequate to provide for the continuation of disability benefits after the normal retirement date.

Table 4

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Illustrative Costs as % of Payroll

(Figures in parentheses on basis of actuarial assumptions related more to 1956-58 turnover experience of group and 1958 differentials in pay by age groups)

	Federal Civil Service Retirement System		Proposed Agency Retirement System			Proposed Agency Retirement System for Identified Group and Civil Service for the Rest 1/
	All Employees	Project 10 Agency	Identified Group	Balance of Group	Total 1/	
1. Normal Cost for Age Benefit	8.94%	8.28% (12.13)	13.12% (21.15)	11.80% (17.29)	12.22% (18.53)	9.83% (15.02)
2. Normal Cost for Disability	1.39	1.49 (1.41)	.93 (.96)	1.25 (1.18)	1.15 (1.11)	1.31 (1.27)
3. Normal Cost for Survivorship	2.06	1.98 (2.73)	1.20 (1.86)	1.52 (2.10)	1.42 (2.02)	1.73 (2.45)
4. Normal Cost for Death and Termination 2/	.16	.25 (.25)	1.60 (1.80)	1.11 (1.13)	1.27 (1.34)	.68 (.75)
5. Past Service Cost 3/	6.95	4.41 (4.41)	6.51 (6.51)	6.54 (6.54)	6.53 (6.53)	5.08 (5.08)
6. Total Cost	19.50% 4/	16.41% (20.93)	23.36% (32.28)	22.22% (28.24)	22.59% 5/ (29.53)	18.63% (24.57)
7. Average Attained Age	43	35	32	37	35	

1/ Weighted 32% Identified and 68% Non-Identified (or the rest). This weighting is applicable by number per Table 1 and also holds in terms of covered payroll.

2/ Provides for return of employee contributions for terminations with less than five years of service under Civil Service Retirement System, but under Proposed Agency Retirement System an employee with 5 or more years of service who terminates before the attainment of age 45 gets a minimum of one year's salary at his then current rate.

3/ This is simply 3% of the actuarial deficiency for the non-retired group of employees. To the extent that there are funds on hand, this may be reduced by 3% of such funds; but on the assumption that roughly comparable funds would be allowable to the Project 10 Agency group and are relatively small anyway, this need not be considered for the purpose of comparing the resultant level of costs.

4/ This is 18.9% after taking into account the assets on hand, per the Thirty-Seventh Annual Report of the Board of Actuaries of the Civil Service Retirement System for the Fiscal Year Ended June 30, 1957.

5/ On the assumption that the identified group would be increased by 10%, such that 35% of the total group would be identified, which appears to be maximum possible error involved because of the way in which the data were made available, this would be increased to 22.62%, or an increase of about one-tenth of 1%.

D. Survivorship - Generally the female was assumed to be five years younger than the male, and all males were assumed to be married, this assumption being deemed to be adequate to provide for the cost of orphan's benefits as well as any lump-sum termination benefits after five or more years of service.

E. Retirement - Normal Retirement was assumed to be age 55 for the identified group (who could retire as early as age 50 after 20 or more years of service - of which 10 was overseas and 5 thereof with the Agency) and age 59 for the non-identified group who have a mandatory retirement age at 60 unless permitted by the Director to continue working beyond that age on a year-to-year basis, but not beyond age 70.

* * * * * * * * * * * * * * * *

We trust that the results of this valuation will be of assistance to you in connection with your consideration of the establishment of suitable pension arrangements for your group. At your instructions, we will be glad to expand on such items as you may feel desirable and to meet with you for discussion of these and related items.

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